



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,662	07/22/2003	Hidenori Usuda	116646	4749
25944	7590	01/19/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			MOUTTET, BLAISE L	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 01/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/623,662	Applicant(s) USUDA, HIDENORI	
	Examiner Blaise L Mouttet	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2004.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935-C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/22/03, 4/26/04, 9/15/04</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Preliminary Amendment***

1. The preliminary amendment filed July 22, 2003 has been entered.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

3. Figures 16 and 17 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

Art Unit: 2853

4. The abstract of the disclosure is objected to because it includes purported merits of the invention inappropriate to a patent abstract. It is suggested that the second paragraph be deleted.

Correction is required. See MPEP § 608.01(b).

5. The disclosure is objected to because of the following informalities:

On line 4 of the Description of Related Art "...a printing device a computer terminal.." should read "...a printing device of a computer terminal..--.

On page 17, line 2 of the bottom paragraph "ddrive" should read --drive--.

On page 28, line 1 "a" should be deleted from "...a relay electrodes..".

Appropriate correction is required.

### ***Claim Objections***

6. Claims 1-12 and 14-17 are objected to because of the following informalities:

In claim 1, line 4 and claim 8, line 4 "each address space" is recited however no address spaces have previously been recited. In light of the specification applicant's meaning for this limitation appears to be a memory with corresponding address spaces.

In claim 1, line 10 "...line-segmented-waveforms:" should read --...line-segmented-waveforms;--.

In claim 1, lines 17-18 and claim 8, lines 15-16 "...correspond the line-segmented-waveform.." should read --...correspond to the line-segmented-waveform..-- in accordance with proper syntax.

Art Unit: 2853

In the last line of claims 1 and 8 "each memory" is recited however only one memory was previously claimed (each implies more than one). It is suggested that "each memory" should correctly read --the memory--.

In claim 2, line 5 "the line-segmented-waveform" should read --a line-segmented-waveform-- since this limitation was not previously recited.

In claim 2, line 6 --the-- should be inserted prior to "line-segmented-waveform" since this limitation has antecedent basis.

In claim 5, line 1 "is comprising" should be replaced by --comprises-- in accordance with proper syntax.

In claim 8, line 11 "the piezoelectric transducer" should read --a piezoelectric transducer-- since this is a new limitation.

In claim 8, line 11 "eject" should read --ejecting-- in accordance with proper syntax.

In claim 9, line 8 "the piezoelectric transducer" should read --a piezoelectric transducer-- since this is a new limitation.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 101 and 35 USC § 112***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Art Unit: 2853

7. Claim 13 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 provides for the use of a method for forming a membrane, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2853

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 2, 8, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Yonekubo et al. US 6,331,040 B1.

Yonekubo et al. discloses, regarding claim 1, a device which is provided with a piezoelectric transducer for driving a liquid drop ejecting head for ejecting a functional liquid by using the piezoelectric transducer (column 10, lines 8-25) comprising:

a memory (51, figure 12) with corresponding address spaces (for address signals 0-3) (column 13, lines 31-38);

a controlling section (52, 53, 54, 56) for memorizing an information which relates to an inclination value of a plurality of different line-segmented-waveforms in the memory (51) (this information corresponds to slew rate information), reading out the information which relates to the inclination value of the line-segmented-waveform from the corresponding memory according to a predetermined readout timing (set by clock signals 2 and 3), forming the line-segmented-waveform according to the information which relates to the inclination value, and generating a driving waveform by combining the line-segmented-waveforms (figure 13, column 13, line 60 – column 14, line 31);

a driving section (57, 58) for driving the piezoelectric transducer by the driving waveform and ejecting a liquid drop from an ejecting section on the liquid drop ejecting head (column 13, lines 7-15, column 13, lines 27-31), wherein

the information which relates to the inclination value contains information for a variation amount of voltage of the line-segmented-waveform per a unit interval (column 14, lines 2-4);

a plurality of different information for the variation amount of voltage correspond to the line segmented waveform (corresponding to the different slew rates of column 13, lines 55-60); and

a plurality of the different information for the variation amount of voltage are stored in the memory (column 13, lines 55-60).

Yonekubo et al. discloses, regarding claim 2, a device which is provided with a piezoelectric transducer for driving a liquid drop ejecting head for ejecting a functional liquid by using the piezoelectric transducer (column 10, lines 8-25) comprising:

an output section (output from memory 51) which outputs information which relates to a plurality of different inclination values (slew rate information) of a line-segmented-waveform (column 13, lines 56-66);

a controlling section (52, 53, 54, 56) for forming the line-segmented-waveform according to the information which relates to the inclination value which is outputted from the output section and generating a driving waveform by combining the line-segmented waveforms (column 13, line 60 – column 14, line 31);

a driving section (57, 58) for driving the piezoelectric transducer by the driving waveform and ejecting a liquid drop from an ejecting section on the liquid drop ejecting head (column 13, lines 7-15, column 13, lines 27-31), wherein the output section outputs information which relates to the inclination value which contains information for a variation amount of voltage of the line-segmented-waveform per a unit interval (column 14, lines 2-4) such that a plurality of different information for the variation



Art Unit: 2853

amount of voltage correspond to the line segmented waveform (corresponding to the different slew rates of column 13, lines 55-60).

The methods of claims 8 and 9 correspond to the functions performed by the device as explained regarding claims 1 and 2.

10. Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Kashiwazaki et al. US 5,593,757.

It is initially noted that claim 15 falls under the category of a "product-by-process" claim (see MPEP 2113). Such claims are limited only to structure implied by recited process steps and not to the process steps themselves. In light of this, claim 15 only calls for an electronic apparatus provided with a device (presumably the cited membrane) that is capable of being formed by a liquid drop ejecting head as claimed. Kashiwazaki et al. discloses televisions or computers (electronic devices) provided with membranes (color filters) that are formed using a piezoelectric-type liquid drop ejecting head (column 1, lines 7-15, column 3, line 60 - column 4, line 4).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2853

11. Claims 3, 4, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonekubo et al. US 6,331,040 B1 in view of Chang et al. US 5,541,628.

Yonekubo et al. discloses the subject matter of claims 1 and 8 as explained in the 35 USC 102 rejection above.

Yonekubo et al. fails to disclose that the line-segmented-waveform includes waveforms with smaller voltage variation amount near an end portion or that the waveform includes a micro-vibration waveform for causing vibration without liquid drop ejection with the ejection waveform.

Chang et al. is relevant to liquid drop ejection devices employing piezoelectric ejection and waveforms used therein (abstract). The waveform taught by Chang et al. includes an ejection portion (piezoelectric drive waveform in period A of figure 7) and a micro-vibration portion (portion of waveform with amplitude  $V_c$ - $V_d$  in period B of figure 7) near an end section of the waveform that has a smaller voltage variation and does not eject liquid (abstract, column 7, lines 55-67). This micro-vibration waveform portion helps remove film from the ejection nozzle thus preventing clogging of the nozzles (abstract).

It would have been obvious to a person of ordinary skill in the inkjet art at the time of the invention to employ the micro-vibration waveform as taught by Chang et al. with the ejection waveform for the piezoelectric actuator using the device and method of Yonekubo et al.

Art Unit: 2853

The motivation for doing so would have been to prevent film formation at the ejection nozzle and thus avoid nozzle clogs as suggested by the abstract of Chang et al.

12. Claims 5, 6, 12, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonekubo et al. US 6,331,040 B1 in view of Kashiwazaki et al. US 5,593,757.

Initially it is noted, regarding claim 15, that dual 35 USC 102 and 35 USC 103 rejections are acceptable for product-by-process claims (see MPEP 2113).

Yonekubo et al. discloses the subject matter of claims 1 and 8 as explained in the 35 USC 102 rejection above.

Yonekubo et al. fails to disclose that the driving device of claim 1 is incorporated into a device or method for forming a membrane on a base board by ejecting the liquid at predetermined positions wherein the membrane formed is a color filter or an electronic device provided with the membrane is formed.

Kashiwazaki et al. discloses a device and method for forming color filter membranes to be used in electronic devices wherein the filters are manufactured using piezoelectric type inkjet printers such as shown by Yonekubo et al. that eject ink at predetermined positions on a base board (1, 2) (figures 1-3, column 1, lines 7-15, column 3, line 60 - column 4, line 4).

Art Unit: 2853

It would have been obvious for a person of ordinary skill in the art at the time of the invention to employ the inkjet device and method of Yonekubo et al. in a device and method for forming a color filter for an electronic device as taught by Kashiwazaki et al.

The motivation for doing so would have been that using inkjet technology in color filter production results in a reduction in cost in manufacturing as suggested by column 2, lines 30-48 of Kashiwazaki et al.

13. Claims 5, 7, 12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonekubo et al. US 6,331,040 B1 in view of "A novel RGB multicolor light-emitting polymer display" by Kobayashi et al.

Initially it is noted, regarding claim 15, that dual 35 USC 102 and 35 USC 103 rejections are acceptable for product-by-process claims (see MPEP 2113).

Yonekubo et al. discloses the subject matter of claims 1 and 8 as explained in the 35 USC 102 rejection above.

Yonekubo et al. fails to disclose that the driving device of claim 1 is incorporated into a device or method for forming a membrane wherein the membrane formed is part of an organic electro-luminescent element.

Kobayashi et al. discloses that inkjet technology is advantageously employed to organic EL display manufacture since inkjet is a good delivery mechanism for the patterning of the polymer solutions.

It would have been obvious to a person of ordinary skill in the inkjet art at the time of the invention to employ the inkjet device and method of Yonekubo et al. in a

Art Unit: 2853

device and method for forming an organic EL display for an electronic device as taught by Kashiwazaki et al.

The motivation for doing so would have been to produce an organic EL display efficiently as suggested by Kobayashi et al.

14. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonekubo et al. US 6,331,040 B1 in view of Chang et al. US 5,541,628, as applied to claims 10 and 11, and further in view of Kashiwazaki et al. US 5,593,757.

Yonekubo et al. in view of Chang et al. renders obvious the subject matter of claims 10 and 11 as explained in the 35 USC 103 rejection above.

Yonekubo et al. in view of Chang et al. fails to disclose that the driving device of claim 1 is incorporated into a device or method for manufacturing a device on a base board by ejecting the liquid at predetermined positions.

Kashiwazaki et al. discloses a device and method for forming color filter membranes to be used in electronic devices wherein the filters are manufactured using piezoelectric type inkjet printers such as shown by Yonekubo et al. that eject ink at predetermined positions on a base board (1, 2) (figures 1-3, column 1, lines 7-15, column 3, line 60 - column 4, line 4).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to employ the inkjet device and method of Yonekubo et al. in view of Chang et al. in a device and method for forming a color filter for an electronic device as taught by Kashiwazaki et al.

Art Unit: 2853

The motivation for doing so would have been that using inkjet technology in color filter production results in a reduction in cost in manufacturing as suggested by column 2, lines 30-48 of Kashiwazaki et al.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Blaise Mouttet who may be reached at telephone number (571) 272-2150. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier, Art Unit 2853, can be reached at (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Blaise Mouttet January 12, 2005

*Blaise Mouttet 01/12/2005*